

Created by : Benjamin Renoncourt	Reference	Title Datasheet ICU for McLaren	
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Datasheet

ICU for McLaren

Created by : Benjamin Renoncourt	Reference	Title Datasheet ICU for McLaren	
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HISTORY

Rev	Status	Date	Author	Description
1.0	In review	2019-10-01	Benjamin Renoncourt	Creation based on signed SOW content
1.1	In review	2019-11-15	Benjamin Renoncourt	Exception added for Japan §5.4

RELEVANT DOCUMENTS

Relevant documents are documents whose application is totally or partially mandatory. They are annexed to this document.

N°	Reference	Rev	Title

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1 SCOPE

McLaren has selected NIS8200 solution as Driver Information and Infotainment Head Unit platform on McLaren new vehicles platform P16 and following platforms.

The solution targets different worldwide markets listed below

Europe	EU / Albania/ FYROM/ Kosovo/ Montenegro
North America	USA/ CND
South America	Brazil, Chile, Mexico, Peru
Asia	Brunei, China, Japan, Hong Kong, India, Indonesia, Korea, Macau, Philipines, Singapore, Thailand, Taiwan
Row	Azerbaijan, Australia, NewZeeland, Belarus, Russia, Kazakhstan, UKRAINE
Middle East	Bahreïn, Jordan, Koweit, Lebanon, Oman, Qatar, Saudi Arabia, UAE
Africa	Botswana, Lesotho, Mozambique, Namibia, South Africa, Swaziland

An early adoption is planned on P22 and P23 with limited scope.

This document defines McLaren NIS8200 product.

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2 SYSTEM ARCHITECTURE

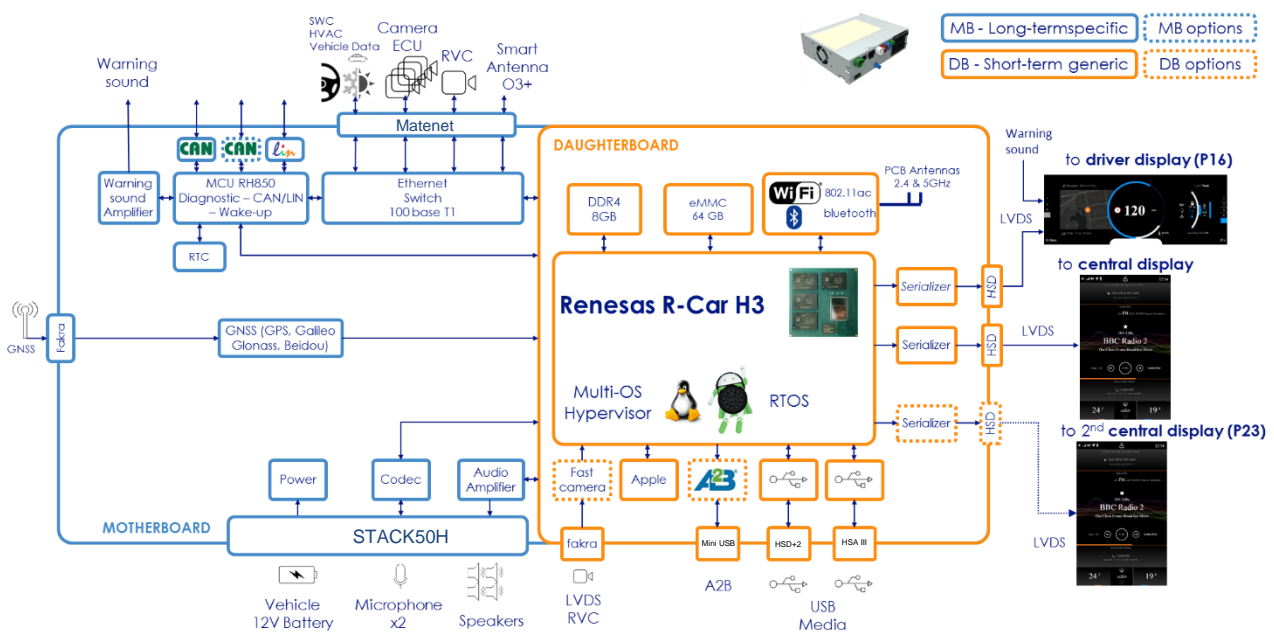
2.1 ICU box

The ICU box is build around 2 main components:

- R-Car H3 from Renesas: the HMI brain (Manufacturer Part Number R8A77951JA00BA)
- RH850 from Renesas (Manufacturer Part Number : R7F016383AFP-C): the MCU handles the power management, diagnostics, vehicule network communication, warning sounds, CAN and LIN networks

Principals features are described below

- Wifi 2,4 and 5GHz
- Bluetooth
- GPS
- Vehicle networking : LIN/CAN/BroadR-Reach Ethernet
- USB2/USB3 to play music from USB key
- A2B
- Displaying on screens



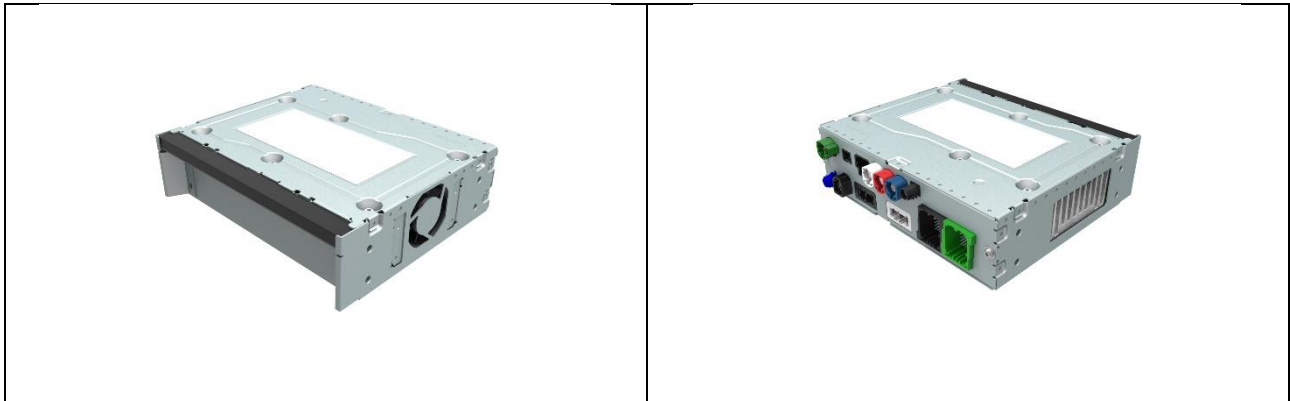
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3 MECHANICAL

3.1 Mechanical view

The mechanical views below are just for indication. See 2D and 3D for each product for accurate information.

3.1.1 ICU box



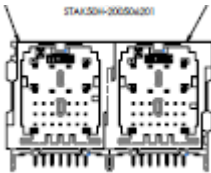
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4 INTERFACES AND CONNECTORS

The following interfaces and connectors are considered.

4.1 ICU box

4.1.1 Main connector



Main CONNECTOR			
CONNEX REF	MOLEX STAK50H-200506201	CONNEX REF	MOLEX STAK50H-200506201
A01	ENTERTAIN_AUDIO_FR_OUT_P	B01	DISP_5V
A02	ENTERTAIN_AUDIO_FR_OUT_N	B02	DISP_GND
A03	ENTERTAIN_AUDIO_RR_OUT_N	B03	VBATT safe
A04	ENTERTAIN_AUDIO_RR_OUT_P	B04	VBATT
A05	ENTERTAIN_AUDIO_RL_OUT_P	B05	FUEL_LEVEL_12V
A06	ENTERTAIN_AUDIO_RL_OUT_N	B06	FUEL_LEVEL_GND
A07	ENTERTAIN_AUDIO_FL_OUT_N	B07	GND safe
A08	ENTERTAIN_AUDIO_FL_OUT_P	B08	GND
A09	LIN	B09	SAFE_AUDIO_OUT_N
A10	LIN_12V	B10	SAFE_AUDIO_OUT_P
A11	LIN_GND	B11	DISP1_BCKL_ENABLE
A12	Cavity Closed	B12	Cavity Closed
A13	LINE_IN_R_SIGNAL_IN	B13	MIC1_GND
A14	LINE_IN_L_SIGNAL_IN	B14	MIC1_SIGNAL_IN
A15	LINE_IN_DETECT	B15	MIC2_GND
A16	LINE_IN_GND	B16	MIC2_SIGNAL_IN
A17	DISP3_BCKL_ENABLE	B17	CAN1_H
A18	DISP3_INT	B18	CAN1_L
A19	Cavity Closed	B19	Cavity Closed

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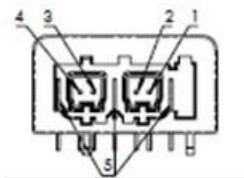
A20	Not used	B20	DISP1_WAKE_UP
A21	Not used	B21	HOME_BUTTON_WAKE_UP
A22	MIC3_SIGNAL_IN	B22	DISP2_WAKE_UP
A23	MIC3_GND	B23	DISP2_INT
A24	MIC4_SIGNAL_IN	B24	DISP1_INT
A25	MIC4_GND	B25	CAN2_H
A26	DISP3_WAKE_UP	B26	CAN2_L
A27	CAN_TERM_P	B27	DISP2_BCKL_ENABLE

Pin out alignment shall be performed.

4.1.2 Ethernet Connectors

Pin out alignment shall be performed

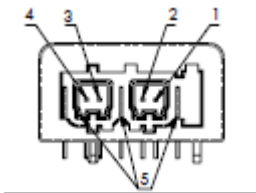
Ethernet CONNECTOR	
CONNEX REF	MATENET-2305987-1
PIN	ETH2_TRX_N
PIN	ETH2_TRX_P
PIN	ETH1_TRX_N
PIN	ETH1_TRX_P
PIN	GND



Ethernet CONNECTOR	
CONNEX REF	MATENET-2305987-2
PIN	ETH2_TRX_N
PIN	ETH2_TRX_P
PIN	ETH1_TRX_N

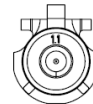
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PIN	ETH1_TRX_P
PIN	GND



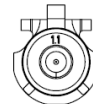
4.1.3 GNSS

Fakra connector GNSS - Rosenberger 59S2AQ-40MT5-C or similar (SMK)
Connection of GNSS antenna (50ohm)



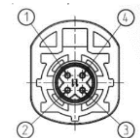
4.1.4 LVDS camera input

Fakra connector LVDS camera input - Rosenberger 59S2AQ-40MT5-E



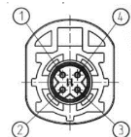
4.1.5 LVDS output : central display

Video and touch panel interface to the central display
Rosenberger D4S20L-40MA5-B



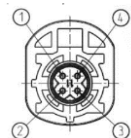
4.1.6 LVDS output : driver display

Video and touch panel interface to the driver display or additional P23 display
Rosenberger D4S20L-40MA5-D



4.1.7 LVDS output : additional P22/P23 display

Video and touch panel interface to P22 display
Rosenberger D4S20L-40MA5-C

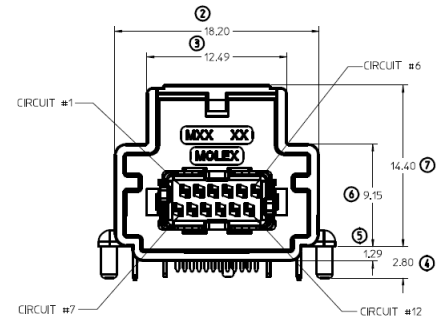


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4.1.8 USB3.0 connector

USB3.0 compliant port will be used, designed to be compliant with USB norm with cables up to 2m length.

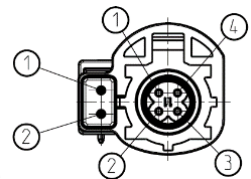
USB 3.0 CONNECTOR	
CONNEX REF	34861-1106 from Molex
PIN	USB3_SSTX_GND_SHIELD
PIN	USB3_SSTX_P
PIN	USB3_SSTX_N
PIN	USB3_SSRX_GND_SHIELD
PIN	USB3_SSRX_P
PIN	USB3_SSRX_N
PIN	USB3_VBUS3_EN
PIN	No used
PIN	USB23_DM
PIN	USB23_DP
PIN	No used



4.1.9 USB2.0 connector

USB2.0 compliant port will be used, designed to be compliant with USB norm with cables up to 2m length.

USB 2.0 CONNECTOR	
CONNEX REF	99S20D-40MA5-E from Rosenberger
PIN	USB2.0_DP_1
PIN	Not used
PIN	USB2.0_DN_1
PIN	not used
PIN	USB2.0_POD_VBUS_ENABLE
PIN	USB2.0_OVC

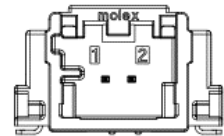


Pin out alignment shall be performed to pass USB certification

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4.1.10 A2B connector

A2B CONNECTOR	
CONNEX REF	349128020 from Molex
PIN	A2B B+
PIN	A2B B-



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5 QUALIFICATION AND APPROVAL

5.1 European Union regulatory compliance

RED certification is ongoing.

5.2 FCC compliance

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Caution:

Changes or modifications not expressly approved by PARROT FAURECIA AUTOMOTIVE for compliance could void the user's authority to operate the equipment.

FCC ID: 2AT94ICU

5.3 ISED Compliance

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. *L'appareil ne doit pas produire de brouillage;*
2. *L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

Caution:

Changes or modifications not expressly approved PARROT FAURECIA AUTOMOTIVE for compliance could void the user's authority to operate the equipment.

Restriction:

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- The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
- High-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.


IC: 35374-ICU


5.4 Japanese Radio Law and Japanese Telecommunications Business Law Compliance

The ICU is granted pursuant to the Japanese Radio Law (電波法) and the Japanese Telecommunications Business Law (電気通信事業法).

This device should not be modified (otherwise the granted designation number will become invalid).



 202-SMH046

 D 19-0021 202

**5GHz band (W52, W53): Indoor use only
(Except when communicating with 5.2GHz high power base stations or relay stations)**